



**AUTOMOBILE BRAKE PAD FRICTION AND
WEAR TEST RIG: FABRICATION**

**ISMAIL BIN MESROR
(2002334636)**

**BACHELOR ENGINEERING MECHANICAL
(HONS.)
UNIVERSITI TEKNOLOGI MARA (UiTM)**

DISEMBER 2005

"I declared that this thesis is the result of my own work except the ideas and summaries which we have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

Signed:
Date:8/12/2005.....

Ismail Bin Mesror

UiTM No: 2002334636

ABSTRACT

This report is about development of an automobile brake pad testing machine. In this project, the most significant thing is to develop a machine that can apply load at a certain interval of time repeatedly. The scope of the project is to develop a machine that can hold an automobile brake pad material that can be operated at various speeds. The machine can also perform brake and release action and be able to operate for long hours. A few friction and wear test in wet condition are also accomplished. The design parameters are based on 'Automobile Brake Pad Friction and Wear Test Rig: Design' by Adam Hood Bin Ab. Rahim. In this report also, I have given some literature review about the machine, fabrication and machining process, some calculations on fabrication and machining process, technical drawings in forms of CATIA and AutoCAD, procedures in commissioning friction and wear test in wet condition and also the analysis of the data. In completion of this report, I have gathered related information from many sources such as books, websites, catalogs, lecturers and friends.

TABLE OF CONTENTS

CONTENTS	PAGE
PAGE TITLE	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
TABLE OF CONTENTS	iv
LIST OF FIGURES	viii
LIST OF ABBREVIATIONS	ix

CHAPTER I INTRODUCTION

1.1	Background of Friction and Wear	1
1.2	History of Friction and Wear	2
1.3	Friction	6
1.4	Wear	7
1.5	Type of Wear	8
1.6	Objectives	10
1.7	Methodology	11
1.8	Scope of Project	11

CHAPTER II LITERATURE REVIEW

2.1	Definitions of title	12
2.2	What is friction and wear test	13
2.3	Current Method of Testing	
2.3.1	Rotating Disc Machine	14
2.3.2	External and Internal Drum	15
2.3.3	Flat-belt Apparatus	18
2.3.4	Wear and Abrasion Machine	20
2.3.5	Four Balls Rolling Machine	22
2.4	Method Used in Automobile Brake Pad Friction and Wear Test Rig	23
2.5	Advantages & disadvantages of Automobile Brake Pad Friction and Wear Test Rig	24

CHAPTER III FABRICATION OF AUTOMOBILE BRAKE PAD FRICTION AND WEAR TEST RIG

3.1	Review on Fabrication and Machining Process	25
3.1.1	Fabrication Process	25
3.1.2	Electric Arc Welding	26
3.1.3	Machining processes used to produce round shapes	27
3.1.4	Machining processes used to produce various shapes	28
3.2	Machine Frame	29
3.3	Motor Base	30
3.4	Speed Reducer Base	32
3.5	Assembling of Castor Wheel	33